AIR TRANSPORT ASSOCIATION

March 3, 2003

Docket Management System
U.S. Department of Transportation
Room Plaza 401
400 Seventh St., SW
Washington, DC 20590-0001

Re: Docket No. FAA 2002-13464
<u>Improved Seats in Air Carrier Transport Category Airplanes</u>

Dear Sir or Madam:

The Air Transport Association of America, Inc. ("ATA"), submits these comments in response to the Supplemental Notice of Proposed Rulemaking regarding improved seats in air carrier transport category airplanes (the "SNPRM" or "Proposal"), published in the Federal Register on October 4, 2002 (67 Fed.Reg. 62294).

ATA is the principal trade and service organization of the U.S. scheduled airline industry. ATA's members[1] account for 95% of the passenger and cargo traffic carried annually by U.S. scheduled airlines. ATA's passenger member airlines, which currently operate a fleet of 4,652 aircraft with over 600,000 passenger seats and over 16,000 flight attendant seats, collectively is the air carrier group that will be most affected by the SNPRM if promulgated as a final rule. For this reason, ATA has an abiding interest in the outcome of this rulemaking proceeding.

ATA appreciates the opportunity to comment on the SNPRM. In the nearly 15 years since the original notice was issued,[2] the industry has gained a great deal of valuable service experience, substantive data from testing, and a more comprehensive estimate of the resources required to demonstrate compliance with the proposed rule. Passenger seats meeting improved survivability standards ("16g-compatible seats") now make up the largest segment of U.S. aircraft seats as a result of retrofits and new aircraft introductions.

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[1] Airborne Express, Alaska Airlines, Aloha Airlines, America West Airlines, American Airlines, American Trans Air, Atlas Air, Continental Airlines, Delta Air Lines, DHL Airways, Emery Worldwide, Evergreen International Airlines, Federal Express, Hawaiian Airlines, JetBlue Airways, Midwest Airlines, Northwest Airlines, Polar Air Cargo, Southwest Airlines, United Airlines, United Parcel Service, and US Airways. Associate members are: Aerovias de Mexico, Air Canada, Air Jamaica, KLM-Royal Dutch Airlines, and Mexicana de Aviacion.

[2] Notice of Proposed Rulemaking (NPRM) 88-8 was issued on May 17, 1988.

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Many airlines have voluntarily invested in 16g-compatible seats in anticipation of a rule setting forth final specifications, with the understanding that 16g-compatible seats would be accepted under the new rule. In addition, more than 67,000 passenger seats – approximately 12% of the fleet – meet all of the criteria in FAR 25.562.

I. Executive Summary

ATA Supports Improved Seats. ATA fully agrees with the long-standing goal to improve occupant safety through enhanced seats, and supports an orderly and cost-effective transition from the previous seat standard (9g seats) to 16g seats on transport category airplanes. As the SNPRM acknowledges, ATA members have supported efforts to introduce into the commercial airline fleet seats with enhanced safety characteristics notwithstanding the absence of a final rule requiring improved seats. Since the FAA began its rulemaking initiative in 1988, ATA members have installed more than 370,000 16g-compatible passenger seats in their airplanes, investing millions of dollars in improved safety.

ATA Cannot Support this Particular Proposal. For a variety of reasons, discussed below in greater detail, ATA cannot support this SNPRM. The industry does not question the need for improved seats, it merely questions the methods and schedule to demonstrate compliance *again* on seats that are now, and were when they were installed, FAA-approved.[3] FAA has not demonstrated, on a safety basis or an economic benefit-cost basis, the necessity for compliance with all of the occupant injury criteria as prescribed by the SNPRM.

- The SNPRM is not consistent with the FAA's Safer Skies initiative, which articulates a guiding public safety policy, nor is it consistent with the Commercial Aviation Safety Team (CAST) integrated, data-driven strategy to improve commercial aviation safety.

- The SNPRM relies on an inadequate safety analysis.

- The cost-benefit analysis used to support the SNPRM suffers from critical deficiencies that lead to overstated benefits and understated costs. It relies on incomplete information and incorrect assumptions, including the benefit of a streamlined seat certification process that does not exist yet, and it does not account for large cost impacts that the airlines will experience if the proposed rule is implemented. **ATA estimates the true 20-year discounted cost of the SNPRM to be $573.2 million, compared to FAA's estimate of $244.7 million.**[4]

[3] For example, many early "16g" seats were not tested to 14G down because, at the time, injury criteria were not part of the requirement.

[4] See Appendix B, p. 4

- The SNPRM is surprising and disappointing because it discarded a concept – 16g-compatible seats – that previously had been accepted by the FAA and industry, and on which airlines and manufacturers had relied to begin manufacturing and installing 16g seats. Until publication of the SNPRM, the question was not whether to accept 16g-compatible seats, the question was merely how to go about substantiating these seats. FAA's failure to recognize and accommodate the industry's investment in 16g-compatible seats is not justified either on a safety or economic basis. ATA members and other airlines should not be penalized for having voluntarily installed improved seats and equipment in their airplanes ahead of the FAA's final rule. We disagree with the FAA's conclusion that the challenge of accommodating improved seats already installed is "too burdensome for the operators and the FAA," and these comments address this issue head on.

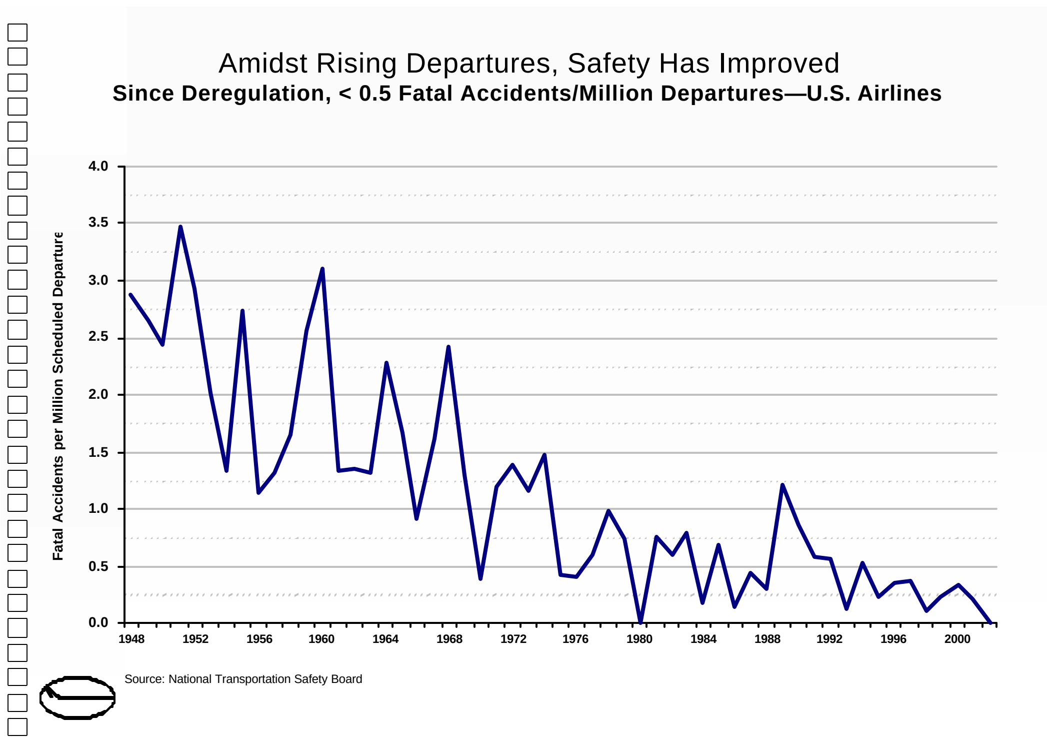
ATA's Recommendations. These comments include recommendations for a revised Proposal, including recognizing continued use of 16g-compatible seats. Our recommendations would achieve the FAA's safety goals, which we share, consistent with Section 303(b) of the Airport and Airway Safety and Capacity Expansion Act of 1987, and consistent with FAA's obligations under the Administrative Procedure Act ("APA") and applicable executive orders. ATA urges the FAA to adopt these recommendations in the final rule.

The SNPRM Fails to Account for the Post-9/11 Operating and Economic Environment. The new economic environment in which the U.S. airline industry now operates directly affects the safety and economic analysis of the impact of the Proposal. However, the SNPRM effectively ignores the changes to the operating and economic environment that pervade the U.S. commercial airline industry, even though the FAA's own forecast has changed. *See: FAA Aerospace Forecasts, Fiscal Years 2002-2013*. This omission in the SNPRM undermines the safety and economic justifications asserted by the FAA to support this particular Proposal. When these factors are properly incorporated into the analysis, the Proposal's substantive and procedural deficiencies become clear. FAA must revise its analysis accordingly.

For example, since September 11, 2001, U.S. airlines have removed close to 300 airplanes from their operations. In 2002, the number of passengers flown decreased by 4.6% from 2001, and 11.5% from 2000. At the same time, and perhaps more importantly for this rulemaking, safety has continued to improve. In 2002, U.S. airlines had no fatal accidents. The accident rate continues to improve. FAA must also not lose sight of the fact that in 2001 and 2002, the U.S. airline industry lost more than $17 billion dollars, and that the forecast for 2003 is a $4-5 billion loss. All of these factors must be considered when analyzing the basis and justification for the Proposal. When they are considered, the Proposal does not satisfy the rulemaking requirements of the APA or the Administration's cost-benefit guidelines.

II. The FAA Safer Skies Initiative and Priorities for Enhancing Aviation Safety

It is the common goal of airlines, airframe manufacturers, and the government to provide safe, reliable air transportation to the public. This partnership in safety is the common ground upon which we build initiatives to prevent accidents and provide safer skies. Each segment of the industry contributes to this effort: airframe manufacturers develop airplane designs with safety enhancing technology, operators employ safe operating and maintenance procedures with focused training, and government provides safety regulations, policy and goals. Through this industry-government partnership, accident rates have declined sharply since deregulation, and in particular over the past 20 years.



In 1998, the FAA formalized its partnership with industry by creating the Safer Skies Initiative to significantly reduce fatal accidents by 2007. This government-industry initiative has greatly helped to focus regulatory and voluntary efforts to improve safety by, among other things, identifying and prioritizing issues that can and should be addressed. To this end, the CAST's integrated, data-driven strategy has produced a prioritized list of safety enhancements that significantly improve aviation safety far more than would the SNPRM if adopted. Pertinent here is that improved seats are not among the issues identified by CAST through the Safer Skies initiative. While we recognize that it is not possible for Safer Skies to prioritize every single regulatory initiative, the point here is that this rulemaking cannot be considered in a vacuum. When it is considered in the context of the policies and priorities of the Safer Skies initiative, then it is clear that the Proposal provides minimal benefit at a very high price. When further considered in the context of the post-9/11 operating and economic environment, with declining passengers and sharply depressed revenues, then it becomes very clear that the Proposal is not justified and, in fact, risks the unintended consequence of drawing scarce resources away from safety initiatives that are likely to provide greater benefit to the traveling public.

In these difficult times where most carriers are experiencing unprecedented fiscal challenges, this partnership must work together to maximize the safety benefits for all investments. This can best be accomplished by focusing on the very priorities recognized by the FAA in its Safer Skies initiative, an initiative that does not include costly seat enhancements. Accident prevention by this process provides the most value for the investment of limited resources.

Furthermore, in light of the Safer Skies initiative, and other on-going and future voluntary and regulatory actions, it is not reasonable to assume, as the SNPRM does, that the accident rate for the 2000-2020 time period will remain static at the accident rate identified for the 1984-1998 time period. FAA and NTSB data demonstrate a continuing improvement in the accident rate,[5] yet the SNPRM arbitrarily ignores these data. For this reason alone the SNPRM's safety analysis is flawed and does not justify the Proposal. However, as discussed in the benefits analysis below, the safety analysis contains even more problems, such as using 9g seats as the baseline for measuring improved safety and including severe accidents where the seat would not have affected survivability.

<u>IV. The SNPRM Benefit-Cost Analysis has Numerous Flaws</u>

For every assumption used in the benefit analysis addressing fatal and serious injury accident rate forecasting, the FAA used the most liberal numbers possible, thus overstating the benefits of full 16g seats (that is, seats that meet all of the criteria of 14 CFR 25.562, hereinafter referred to as "25.562"), compared to 16g-compatible seats. The FAA's methodology is not supported by accident data or reasonable forecasts of accident rates or traffic growth, and is thus unreasonable, arbitrary and capricious. The aggregate effect of relying on these unsupportable assumptions is an overstated benefit value favoring seats that meet all of the criteria of 25.562. Had the FAA relied on assumptions that factor in better accident data and rational forecasts, which more accurately reflect the uncertainty of the accident data and the small sample size, it would have lead to a far different conclusion to the benefit-cost analysis. As a result, if the SNPRM is made final, the industry will be burdened unnecessarily by the costs of replacing existing 16g-compatible seats much earlier than is justified. In Appendix A, we discuss the following problems with the FAA's <u>*benefits*</u> analysis:

- Economic Conditions are different now (post 9/11)
- The benefits from the rule are derived from the structural criteria (not HIC)

[5] The comments submitted by Boeing provide an expanded discussion of this point. ATA agrees with and supports Boeing's discussion and will not repeat that information here.

- Accident rates are not flat, but have a downward trend
- The adjustment factors unfairly and unreasonable discount the benefits of 16g-compatible seats
- The FAA used the "high benefit" bands from the Cherry Study

Similarly, in Appendix B, we examine flaws in the FAA's *cost* analysis. For example, because of incorrect assumptions made about the life span of a seat, FAA neglected to consider major cost components of this rule. FAA assumed that passenger seats are replaced every 14 years and that the only costs to the airlines would be recertification costs ($300,000 per 1,200 seats). In reality, these seats typically are replaced every 25 years. Thus, in order to comply with this rule, a substantial retrofit will have to be done within a 14 year time period. No costs were considered for seats, installation, or taking aircraft out of service to complete the retrofit.

In estimating the cost of replacing flight attendant seats, the FAA took into account certain cost elements -- certification, seats, and installation. However, the values FAA used for seat and installation costs were far below what the airlines have experienced. The FAA estimated $5,400 per flight attendant seat, whereas ATA pays $15,600 for flight attendant seats. In addition, FAA estimated an approximate cost of $85 to install a flight attendant seat. Using the ATA mechanic labor rate of $70/hour, the FAA's $85 estimate translates into 1.2 hours of mechanic time for installation. In fact, ATA estimates 40 hours to install a shipset of flight attendant seats. That includes recovering and transporting the seats from storage, installing them, and running all safety checks. FAA also excluded the cost and installation of new monuments necessary to support these new flight attendant seats with the higher loading capability.[6]

In short, FAA's cost estimates to comply with this rule are about half of what ATA estimates them to be. ATA calculates the cost of implementing the SNPRM to be more than $1.12 billion over 20 years,[7] or $573.2 million present value. In Appendix B we discuss the following problems with the FAA's cost analysis:

- High cost of removing seats for Front Row HIC (or adding new technology, like seat belt airbags)
- Cost of demonstrating compliance with more complex requirements than were previously discussed in 16g retrofit rule comment periods (1998, 1988)

[6] ATA does not believe monument modifications should be required. However, because new production aircraft must meet enhanced seat attachment criteria, we have included this factor in our cost analysis for retrofitting existing aircraft. FAA's analysis overlooks this cost component.

[7] $2,524,795,160 adjusted to account for aircraft retired without having to comply with the SNPRM. See Appendix B, p. 4.

- "Double jeopardy" of demonstrating compliance once through a 16g-compatible seat program, then having to re-demonstrate compliance based on the retrofit rule regulation.
- Average life of the seat is underestimated
- The reality that this regulation would drive a "replace-one-seat, replace-them-all" condition for the airlines
- Current policy requires monument walls to be upgraded for flight attendant seat installations. High cost of these upgrades is not included in SNPRM.
- Efficiencies from the Seat Certification Process Streamlining efforts should not be included in the analysis until they have been fully demonstrated.

V. The Industry Continues to Install 16g Seats

The analysis wrongly assumes that, in the absence of regulatory action, airlines will not voluntarily move towards investment in 16g seats when purchasing new seats due to their higher cost and the potential loss of revenue seats due to HIC. As indicated in Appendix C, a large percentage of passenger seats have already been upgraded to 16g-compatible seats that include all 25.562 requirements except front row HIC. Because virtually all seats manufactured in the last 12-15 years have enhanced structure compatible with the structural requirements of TSO C127 and 25.562, the economic benefits of maximizing parts commonality within an aircraft type dictate that airlines will, in fact, continue this upgrade policy. Indeed, it is unreasonable for FAA to assume otherwise.

VI. The ATA Recommendations

Using the general approach of the SNPRM, ATA has developed alternative recommendations that we believe achieve the goal of improved seat safety, but in a way that is justified both on a safety basis and cost-benefit basis. We urge the FAA to issue a final rule that adopts one of the following alternative recommendations:

Alternative 1 –

Allow the industry to continue to implement full 16g and 16g-compatible seats on a voluntary basis without further rulemaking.

- Industry has a good track record of doing this (see Appendix C).
- Seat suppliers currently use "16g technology" on most, if not all seats manufactured, even if they are not marked as TSO C127.
- Most new aircraft have 16g-compatible seats installed and there is financial incentive to continue this practice to maintain fleet commonality.
- The FAA has not adequately justified their current rulemaking proposal.

- Regulating investment in seat enhancement is not consistent with the priorities established by the Safer Skies initiative.

If the FAA is unwilling to rely on the on-going voluntary replacement process implemented by the industry notwithstanding the absence of a formal regulation, then the following alternative should be considered:

Alternative 2 –

Revise the SNPRM proposal to accommodate 16-g compatible seats and establish an implementation schedule that recognizes the actual useful life of airplane seats. ATA's proposal, like the SNPRM, distinguishes between newly manufactured aircraft and existing aircraft. In comparison to the SNPRM, ATA estimates the 20-year discounted cost of this alternative to be approximately $46.5 million.

A. Passenger Seats on New Aircraft. ATA recommends that proposed § 121.311(j)(1) be replaced by the following sub-paragraphs:[8]

> "(1) For airplanes manufactured on and after [insert date four years after the effective date of this rule], all passenger seats on the airplane meet the requirements of § 25.562 of this chapter, except that, for airplanes not having § 25.562 or portions of § 25.562 in their original Type Certification basis, only paragraphs 25.562(a), 25.562(b)(2), 25.562(c)(7), and 25.562(c)(8) of this chapter would apply."
>
> "(2) For airplanes manufactured on and after [insert date seven years after the effective date of rulemaking], all passenger seats on the airplane meet the requirements of § 25.562 of this chapter, except that:
> (i) for airplanes not having paragraph 25.562(c)(5) in their Type Certification basis, this paragraph would not apply; and
> (ii) for airplanes having paragraph 25.562(c)(5) in their Type Certification basis, installation limitations relative to 25.562(c)(5) shall be consistent with the airplane Type Certification basis."

The following points support this approach:

- This proposal would allow continued use of existing 16g-compatible seats and minimize the costs associated with re-certifying these seats. This proposal also eliminates the significant inventory costs associated with the airlines having to maintain different (pre- and post-rulemaking) part numbers.

[8] The text of proposed § 121.311(j) as proposed by the FAA would not change: "On and after [insert date four years after effective date of final rule], no person may operate a transport category airplane type certificated after January 1, 1958, in passenger-carrying operations under this part unless—"

- The industry worked closely with the FAA to define a 16g-compatible seat in 1998. By excluding this alternative in the SNPRM, the FAA has unilaterally eliminated the mutual progress made at that time. FAA, airlines, seat suppliers, and airframe manufacturers need to work together to define a streamlined, cost-effective means of defining and substantiating a 16g-compatible seat.
- Rapid substantiation of 16g-compatible seats could be completed based on full recognition of similarities within a seat family and liberal use of rational analysis in a one-time effort to gain acceptance for a large population of seats. A joint FAA/Airline/Seat Supplier/Airframe Manufacturer working group can further define rational analysis methods.
- The proposed rule understates the safety value of 16g-compatible seats. It has long been recognized that occupant safety in survivable accidents is largely dependent upon the seat remaining structurally attached to the airplane floor. Only secondary benefits can be gained by minimizing head impact (HIC), lumbar and femur compressive loads, and seat belt tension loads. This knowledge has been the basis for establishing the certification criteria for recent derivative aircraft types, wherein only the structural aspects of FAR 25.562 have been imposed. Yet the cost/benefit analysis for the SNPRM places a much higher value on occupant injury criteria than is supportable by accident data.
- HIC requirements, especially front row HIC, carry a very high cost in terms of lost seat count and revenue that is not supportable by accident data.
- Adopting a phased implementation of additional requirements becomes more reasonable as time progresses. As delivery schedules for older aircraft end, new seats meeting these criteria can be economically incorporated onto a new aircraft.
- There would be an incremental cost of adopting the more stringent seat design standards, but it is unquantifiable at this time. When an airline purchases a new aircraft, seats are included in the price of the aircraft. If a different, more expensive seat has to be installed, the price of that aircraft will have to be renegotiated with the manufacturer.

B. <u>Passenger Seats on Existing Aircraft (retrofit)</u>. ATA recommends that proposed § 121.311(j)(2) be replaced by the following:

> "(k)(1) For airplanes manufactured before [insert date 4 years after the effective date of final rule], on and after [insert date 21 years after the effective date of final rule], no person may operate a transport category airplane type certificated after January 1, 1958, in passenger-carrying operations under this part, unless all passenger seats on the airplane meet the requirements of § 25.562 of this chapter to the extent consistent with the Type Certification basis of the airplane, except that for airplanes not having § 25.562 in their original Type Certification basis, only paragraphs 25.562(a), 25.562(b)(2), 25.562(c)(7), and 25.562(c)(8) of this chapter would apply."

> "(2) For airplanes manufactured before [insert date 4 years after the effective date of final rule], on and after [insert date 21 years after the effective date of rulemaking], all new passenger seat part numbers corresponding to a new family of seats must meet the minimum requirements of TSO C127 or paragraphs 25.562(a), 25.562(b)(1), 25.562(b)(2), 25.562(c)(2), 25.562(c)(4), 25.562(c)(6), 25.562(c)(7), 25.562(c)(8) of this part. Installation limitations relative to seat dynamic testing will be consistent with the airplane original type certification basis."

These additional factors support this approach:

- This approach does not penalize the industry for being proactive over the last decade in installing 16g-compatible seats in advance of a Retrofit Rule. The 21 year time frame allows for full utilization of a seat's useful lifespan, compared proposed 14 year retrofit window, which effectively requires airlines to remove seats that cannot be economically re-certified or modified.
- This provision also allows for mixing old and new seats on the same aircraft based on business or reliability criteria. It recognizes that it is not industry practice to change all of the seats on a given aircraft at the same time.
- While the intent of the year 4-14 proposal is to hasten the introduction of dynamic seats, having to replace an entire shipset of seats at the same time could well have the opposite effect; it is a disincentive for the airlines to do anything due to the high costs associated with such a requirement.

C. Flight Attendant Seats on New and Existing Aircraft. With regard to flight attendant seats,[9] ATA recommends replacing proposed § 121.311(k) with the following new paragraph (l):

> "(l)(1) For airplanes manufactured on and after [insert date four years after the effective date of rulemaking], all flight attendant seats, would be required to meet the minimum requirements of TSO C127 or paragraphs 25.562(a), 25.562(b)(1), 25.562(b)(2), 25.562(c)(1), 25.562(c)(2), 25.562(c)(3), 25.562(c)(4), 25.562(c)(6), 25.562(c)(7), 25.562(c)(8) of this part. Installation limitations relative to seat dynamic testing will be consistent with the airplane's type certification basis."

> "(2) For airplanes manufactured before [insert date 4 years after the effective date of final rule], on and after [insert date 21 years after the effective date of final rule], no person may operate a transport category airplane type certificated after January 1, 1958, in passenger-carrying operations under this part, unless all newly manufactured flight attendant seats on the airplane meet the minimum requirements of TSO C127, with installation limitations relative to seat dynamic testing being consistent with the airplanes type certification basis."

[9] The scope of the Proposal regarding attachments for flight attendant seats is unclear. ATA believes that the final rule must be limited to seat criteria only and should not address monuments or attachments.

This approach is supported by the following factors:

- The FAA has failed to demonstrate the benefits it claims from upgrading flight attendant seats. While the FAA claims "evidence supports the FAA position that the action of five additional functioning FA's can avert at least an additional 36 fatalities in one or more survivable accidents," this evidence has not been presented. It is mere speculation. On the other hand, the evidence does show that current flight attendant seats successfully protect flight attendants. In the accident data used by the FAA, all but one flight attendant survived these accidents, and the one fatality could not be attributed to seat design.
- As noted by the FAA, carriers rarely replace flight attendant seats. This proposal allows for full utilization of a flight attendant seat's useful lifespan as opposed to the as-proposed, 14 year removal, of these seats.
- Virtually all flight attendant seats manufactured today meet the requirements of TSO C127.
- The wording of the rule should clearly state that structural modifications to bulkheads and modules would not be required except where dictated by the aircraft Type Certification basis.

VII. Conclusion

Working together, the aviation industry and the FAA can achieve our mutual safety goals while responsibly allowing the industry to implement these changes. As discussed above, the current version of the SNPRM is deficient in several areas and is in need of significant revision. By carefully considering the changes outlined above, significant safety benefit can be achieved without over-burdening already burdened industry resources. The aviation industry encourages the FAA to work in a collaborative manner to obtain these objectives. All of these objectives are in the public interest.

Respectfully submitted,

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March 3, 2003

Appendix A - Discussion of Benefits

The accident data used by the FAA's Civil Aero-Medical Institute (CAMI) to develop the criteria for FAR 25.562 clearly supports the dynamic seat structural criteria. *However, it does not draw any correlation to a benefit for the addition of HIC testing.* This is a significant weakness in the safety analysis and, consequently, the benefit-cost analysis.

A review of more recent accident data has shown that accident rates have significantly decreased since the initial study period and that the types of accidents have changed over this and subsequent time periods. In addition, since the November 2000 benefit-cost analysis, forecasts of future enplanements (including the FAA's own forecast) have dramatically decreased. The SNPRM does not use these current forecasts in its benefit analysis. This is another significant problem with the benefit-costs analysis because it is clear the anticipated benefits from implementing the SNPRM will not be achieved.

The analysis is further distorted by its assumption of linear trends in forecasting future accident rates and airplane enplanements. The accident data provided by the National Transportation Safety Board (NTSB) is neither linear nor constant. There is, however, a general decline in accident rates (excluding terrorist acts) in the last 10 years, and of the accidents that have occurred only a small percentage were survivable and of the type where dynamic seats would appreciably reduce serious injuries. For this group of survivable accidents, the SNPRM fails to properly account for the benefit of 16g-compatible (and fully complaint FAR 25.562) seats – already installed and that will be installed even without a final rule.

The FAA claims a significant benefit from full FAR 25.562 seats. However, the SNPRM and related documents do not demonstrate the safety benefit attributable to full FAR 25.562 compliant seats compared to 16g-compatible seats, and for this additional reason its benefit analysis is suspect. In particular, the FAA applies adjustment factors to "calculate" the relative value of 16g-compatible seats and TSO-C127 seats. However, the origin of these factors and the basis for applying them is unknown and not subject to public review and substantiation. On the other hand, the cost of achieving this incremental benefit is high. In our view, the FAA benefit analysis significantly overstates the value of this aspect of the SNPRM.

The FAA has so far failed to respond to industry queries about how these adjustment factors were derived; yet these adjustment factors are critical in placing a safety value on a large number of existing seats.

Review of Nov 2000 FINAL Report: "Improved seats in Transport Category Airplanes: Analysis of Options"

Page 1, Executive Summary: The evaluation of benefit-cost for each option places a large, and in the ATA's view, unrealistic differentiation between full and partial 16g seats in terms of fatalities and serious injuries. The report did not supply accident data to support its conclusions.

Page 21, Risk Reduction Estimates and Relative Performance by Seat Type:
Estimates of the safety benefits of full 16g seats are based on a study of only 25 impact-related accidents involving Part 121 operated aircraft during the period 1984-1998. The estimates are based on an engineering assessment of the possible benefits of full 16g seats, at best a guess, which overly favors full 16g seats. The small sample size, coupled with an unsubstantiated estimate of relative seat performance, leads to a conclusion that overstates the benefits of full versus partial 16g seats.

In defining and valuing partial 16g, the analysis wrongly assumes that because a seat installation has not been certified as compliant with the occupant injury criteria of 14CFR§25.562(c), it offers no benefit whatsoever in that regard. In reality, seats that meet the 16g structural criteria offer occupant injury benefits due to their similarity and family relationship to seats that are full 16g compliant.

Page 24, Assumptions: In comparing the relative safety benefits of partial versus full 16g seats, the analysis applies the high end of the benefit range to full 16g seats on the rationale that because the Cherry study did not differentiate between the relative benefits of full 16g seats versus various partial 16g seats, and because many seats manufactured after 1992 are "better-than 9g seats," the low end of the benefits range does not apply. This assumption is not consistent with acknowledged benefit of seats that meet the structural criteria of FAR 25.562 and, consequently, overstates the benefit of full 16g seats. Further, there is no basis to assume that a large population of 9g seats was represented in the accident data studied by Cherry.

The analysis assumes worst-case casualty rates based upon a linear extrapolation from historic averages, yet overall, there has been a gradual reduction in accidents and fatality rates as is evident from NTSB published accident data. **On Page 3, the analysis acknowledges: "if casualty rates fall during the forecast period, then options 2, 3, 4, and 5 may represent unnecessary expenditures that yield little or no incremental life savings benefits."**

Because impact accidents typically involve other fatality-causing factors (such as fire), it is difficult to assess on the basis of accident data alone which fatalities were strictly related to seat structural failures or HIC related injuries. Typically, there are no post-mortem autopsies performed in conjunction with accident investigations to conclude the exact causes of fatalities. To account for this variability, the Cherry study assigns low, median and high ranges to the estimates of casualties averted by 16g seats. *The FAA's choice of the high range in its analysis is not reasonable in light of the number of 16g-compatible seats in the fleet, the absence of data to demonstrate a large number of 9g seats were involved in the accidents included in the Cherry study, the absence of data concerning injury/fatality causality, and an unrealistic assumption that casualty rates will remain static.*

Finally, the Federal Register Notice (63FR58331, dated October 30, 1998) discusses potential techniques that would allow front row passenger seats to be compliant with the HIC criteria at the current setback from monuments in today's aircraft configurations. Extensive experience to date has not revealed any production-ready technique that meets this aggressive goal. Although several potential techniques show promise, none have demonstrated compliance through certification on large transport category aircraft. This has resulted in greater setback of the front row passenger seat to the monument with 16g seats as compared to similar configurations with 9g seats. This larger set-back must be absorbed in the cabin by eliminating other cabin features (e.g. monuments), spacing seats closer together or removing seats from the airplane. Requiring TSO-C127, but not 25.562, will result in an enhanced seat without negatively incurring the costs associated with the likely reduction in seat count required by HIC requirements.

Appendix B – Discussion of Costs

Since the 1988 NPRM was released, the airline industry has invested heavily in 16g-compatible seats and, naturally, desires to protect that investment. As explained in our comments, a final rule that accommodates 16g-compatible seats advances the safety objective of the NPRM and rationalizes the benefit-cost analysis. On the other hand, forcing replacement of 16g-compatible seats as proposed in the SNPRM cannot be justified on a benefit-cost basis. Of greatest concern is the economic impact of removing seats in order to meet front row HIC requirements. As discussed below, the FAA's cost analysis is deficient for several reasons and produces a flawed result.

While the dynamic testing guidelines and methods for demonstrating compliance with TSO-C127 and FAR 25.562 have evolved, the airlines have diligently endeavored to keep pace with the changes and have voluntarily incorporated safety enhancements on older aircraft. Ironically, the FAA's 15-year delay in releasing the SNPRM has exposed the industry to potentially greater economic impact than if it had been implemented earlier. The 16g-compatible seats that would have been "grandfathered" under earlier versions of the rule would require extensive modification and testing to qualify under this latest release. As an example, a seat purchased new in 2002 (or earlier) and certified to TSO-C39 would, under the new rule, require re-certification to TSO-C127 within 14 years. This form of double jeopardy is unfair and cannot be justified based on the FAA's out-of-date (August 2000) befit-cost analysis.

The FAA has failed to show sufficient justification for the costs associated with re-certifying or replacing 16g-compatible seats. The FAA's statement that they have "abandoned the proposal for certification of seats as 16g-compatible because it would be impractical" is not substantiated. For the sake of administrative convenience, which benefits only the FAA, the SNPRM mandates a complex and costly requirement upon the industry. The 14 year compliance deadline does not ameliorate this burden.

The proposal estimates the average life of seats to be 14 years and, on that basis, stipulates that all airplanes manufactured more than four years after the effective date of the rule must be retrofit with fully compliant dynamic seats. This estimate is wrong and, consequently, many of the 16g-compatible seats manufactured and installed in recent years would never realize anywhere near their useful life as a result of the SNPRM. In actuality, economy-class seats, the majority of seats installed on an aircraft, typically are replaced only once during the life of the aircraft (42 years). Premium class seats have, in the past, been replaced somewhat more frequently, but given the current economic and operating environment, that practice will change. The FAA's benefit-cost analysis therefore uses incorrect assumptions regarding this important factor and fails to properly measure the actual cost of the SNPRM.

Also, where there is a mix of 9g and 16g-compatible seats on an airplane, the SNPRM discourages airlines from replacing the 9g seats for as long as possible due to the cost exposure of having to also replace the 16g-compatible seats. Where some 16g-compatible seats might be re-certifiable to full FAR 25.562 compliance, the cost of testing and retrofitting such seats would be comparable to replacing them.

Furthermore, allowing existing seats to remain installed for 14 years does not account for re-pitching or relocating existing seats, a common practice in the industry, or mixing new and old seats in different zones on a given aircraft. Under the SNPRM, if even one seat moves or one new part number is introduced, all seats on the airplane, even those where no change occurred, would have to be re-tested or replaced in order to certify the new aircraft installation.

In the preamble to FAA Notice 86-11 (the NPRM for production aircraft), the cost analysis noted: "with the exception of seats, there will be no need to modify the airplane structure, interior furnishings, or the occupant restraint system as a result of the proposal, therefore [the FAA] estimates that there will be no additional costs for these items." Subsequent to the release of the rule as Amendment 25-64, the FAA issued a policy that defined "seat attachment" for a flight attendant seat to include the local wall construction in monuments and an entire panel for partition-mounted seats. This policy has mandated significant redesign of aircraft commodities beyond the basic flight attendant seat. If this same policy were applied to flight attendant seats in all current Part 121 operations, there would be a significant burden on the industry to attempt to comply with the rule. These costs have not been fully accounted for in the FAA's analysis.

While there is an ongoing effort to streamline the seat certification process, this effort can best be described as a work in progress. Before promulgating rulemaking for 16g seats, the FAA must demonstrate that this streamlined process can produce substantive results. Although the ATA encourages and participates in this streamlining effort, to date there has been no such demonstration. Any benefit from such a process is speculative, at best, and it is wholly inappropriate to include this item as part of the benefit-cost analysis.

In response to the FAA's request for suggestions for making the approval of seats more efficient, the following is submitted for consideration. There has been an effort by seat manufacturers and others to develop criteria whereby similar seats could be certified based on previously obtained test data. Following this general theme, it is suggested that the FAA allow the use of a new industry-standard seat track in the dynamic testing of seats in conjunction with either TSO-C127 or 25.562. The specific configuration of this standard seat track could be defined by a joint industry-FAA initiative. As the same seat is frequently installed on multiple fleet types with different types of seat tracks, this new provision would reduce the number of dynamic (sled) tests required and reduce the cost of the approval process. Representative tracks could still be an acceptable alternative to a standard track. Additional detail can be supplied upon request.

The events of September 11, coupled with a weak economy and changes in purchaser behavior – particularly business travelers, have profoundly affected the airline industry. The financial health of the airline industry has plummeted due to a rapid decline in passenger travel. Next to safety, reducing operating costs is a top priority within the industry, as many airlines struggle to avoid or recover from bankruptcy. The SNPRM *unnecessarily* adds to the industry's struggle to reduce costs because, as discussed in Appendix A, its benefits are overstated. ATA's cost analysis, below, demonstrates that the 20 years cost of the SNPRM, discounted to present value, is $573.2 million. This compares to the FAA's estimate of $244.7 million.

16G Seat Cost Analysis - 2003

	Certification Level I					Certification Level II				
	Tourist Class	Business Class	First Class	Flight Attendant	Total - Cert Level 1 (PAX)	Tourist Class	Business Class	First Class	Flight Attendant	Total - Cert Level 2 (PAX)
# of PAX seats	113,861	2,452	9,124			87,238	4,103	7,048		
Passenger Seats										
Cost of seat	$209,413,151	$12,586,933	$46,836,633			$160,448,130	$21,062,067	$36,179,733		
Certification costs - seats					$9,750,000					$8,625,000
Installation costs - Eng					$166,400					$147,200
Installation costs - Mech					$7,767,900					$6,022,800
Scrapping Inventory Costs					$6,271,850					$4,919,450
Additional Inventory Costs					$4,286,017					$3,323,140
Downtime (to meet 14 year compliance period)					$0					$0
# of aircraft special check										
# days of for special check										
$ per day downtime costs										
Total Cost of PAX Seats					*$297,078,784*					*$240,727,520*
Flight Attendant Seats										
Cost of seat				$69,245,280					$53,688,960	
Cost of monument				$26,143,546					$20,270,259	
Certification costs				$0					$0	
Installation costs - Eng				$166,400					$147,200	
Installation costs - Mech				$3,452,400					$2,676,800	
Total Cost of F/A Seats				*$99,007,626*					*$76,783,219*	

	Certification Level III, IV, V					Certification Level VI					Members Reporting	
	Tourist Class	Business Class	First Class	Flight Attendant	Total - Cert Level 5 (PAX)	Tourist Class	Business Class	First Class	Flight Attendant	Total - Cert Level 6 (PAX)	Total F/A Seats	Total PAX Seats
# of PAX seats	236,639	11,199	23,955			47,364	7,043	2,526				552,442
Passenger Seats												
Cost of seat	$435,226,449	$57,436,867	$122,455,667			$0	$0	$0				$1,101,645,530
Certification costs - seats					$31,125,000							$49,500,000
Installation costs - Eng					$631,200							$844,800
Installation costs - Mech					$22,503,600							$36,294,300
Scrapping Inventory Costs					$13,584,150							$24,775,450
Additional Inventory Costs					$12,416,586							$20,025,743
Downtime (to meet 14 year compliance period)					$28,933,200							$28,933,200
# of aircraft special check					643							
# days of for special check					3							
$ per day downtime costs					$15,000							
Total Cost of PAX Seats					*$724,212,718*					*$0*		*$1,262,019,023*
Flight Attendant Seats												
Cost of seat				$200,603,520								
Cost of monument				$75,737,830								
Certification costs				$0								
Installation costs - Eng				$631,200								
Installation costs - Mech				$10,001,600								
Total Cost of F/A Seats				*$286,874,150*					*$0*		*$462,664,995*	

Industry Seat Costs			
PAX FC	PAX TC	Flt Att	Monuments
5,133	1,839	15,600	26,504

	10 ATA Members Reporting
Total Cost - all PAX and all F/A seat retrofit	$1,724,684,018
Total Cost - all PAX and no F/A seat retrofit	$1,262,019,023
Total Cost - 9G PAX seat retrofit (Level I, II) and no F/A seat retrofit	$537,806,304
	Industry (before retirements)
Total Cost - all PAX and all F/A seat retrofit	$2,524,795,160
Total Cost - all PAX and no F/A seat retrofit	$1,847,491,765
Total Cost - 9G PAX seat retrofit (Level I, II) and no F/A seat retrofit	$787,304,074
	Industry (assuming 88.4% of aircraft will be retired in 21 years)
Total Cost - 9G PAX seat retrofit (Level I, II) and no F/A seat retrofit	$91,327,273

16G Seat Cost Analysis Assumptions	
Passenger Seats	Cost Elements
Cost of seat	# of seats (from carrier inventory submitted to ATA) * avg cost of seat (average of carrier data submitted to ATA)
Certification costs - seats	# of fleet types (from carrier inventory submitted to ATA) * $375,000 cert cost (average of carrier data submitted to ATA)
Installation costs - Eng	# of fleet types (from carrier inventory submitted to ATA) * 80 manhours (average of carrier data submitted to ATA) * $80 labor (average of carrier data submitted to ATA)
Installation costs - Mech	# of a/c (from carrier inventory) * 90 manhours (average of carrier data submitted to ATA) * $70 labor (average of carrier data submitted to ATA)
Scrapping Inventory Costs	# of seats * $50 lost to resellers (carriers will no longer be able to sell old seats to resellers or for parts)
Additional Inventory Costs	1.4% * # of a/c * 135 seats * avg cost of TC seat (from one carrier - keep spares for 1.4% of fleet)
Downtime - # of aircraft that will have to be retrofitted at a specially scheduled maintenance visit	assume 18% of a/c will need to be done at special check; no downtime assumed for Level I and II, because of age of aircraft, these aircraft will most likely be retrofitted first or phased out of fleet by end of compliance period
Downtime - # days of for special check	3 days
Downtime - $ per day downtime costs	$15,000
Flight Attendant Seats	
Cost of seat	3.6 F/A seats (weighted average from Boeing) * # of a/c (from carrier inventory submitted to ATA) * avg cost of F/A seat (average of carrier data submitted to ATA)
Cost of monument	25% (from Boeing - assume 25% of monuments will have to be changed out with seat) * 3.2 monuments per a/c (weighted average from Boeing) * avg cost of monument (average of carrier data submitted to ATA)
Certification costs	no data available
Installation costs - Eng	# of fleet types (from carrier inventory submitted to ATA) * 80 manhours (average of carrier data submitted to ATA) * $80 labor (average of carrier data submitted to ATA)
Installation costs - Mech	# of a/c (from carrier inventory) * 40 manhours (average of carrier data submitted to ATA) * $70 labor (average of carrier data submitted to ATA)
Retirement Rate	
Retirement Rate	Using the Age Distribution chart from World Jet Inventory, 2001, 88.4% of aircraft will be 25 years or older in 21 years.

Appendix C – Distribution of Seats

Passenger Seat Inventory

ATA Summary (10 members reporting)

	Tourist Class	Business Class	First Class	Total	% of Grand Total
Cert Level I	113,861	2,452	9,124	125,437	22.7%
Cert Level II	87,238	4,103	7,048	98,389	17.8%
Cert Level III	73,961	950	7,276	82,187	14.9%
Cert Level IV	137,919	9,820	13,744	161,483	29.2%
Cert Level V	24,759	419	2,835	28,013	5.1%
Cert Level VI	47,364	7,043	2,526	56,933	10.3%
Grand Total				552,442	

ATA CERTIFICATION CATEGORIES		I	II	III	IV	V	VI
Description		9G					Full 16g
25.562 REQUIREMENTS							
(a)	Seat and restraint system must protect occupant	Compliance with 25.562					
(b)	Each seat must be dynamically tested as follows:						
(1)	combined vertical/longitudinal (14g)	NO	NO	NO	YES	YES	YES
(2)	combined longitudinal/side impact (16g)	NO	YES	YES	YES	YES	YES
(c)	Performance measures:						
(1)	upper torso restraint strap max tension = 2000 lbs	NO	NO	NO[1]	N/A[1]	N/A[1]	YES[5]
(2)	max lumbar compressive load = 1500 lbs	NO	NO	NO	YES	YES	YES
(3)	upper torso restraint strap must remain on ATD's shoulder	NO	NO	NO[1]	NO[1]	NO[1]	YES[5]
(4)	lap belt must remain on ATD's pelvis	NO	NO	NO	YES	YES	YES
(5)	max HIC value = 1000 units	NO	NO	NO	NO	YES[2]	YES
(6)	max femur load = 2250 lbs	NO	NO	NO	YES	YES	YES
(7)	seat must remain attached to floor	NO	YES[3]	YES[3]	YES	YES	YES
(8)	seat yielding must not impede rapid evacuation	NO	NO	YES[4]	YES	YES	YES

[1] Requirement is only applicable to seats with shoulder harnesses (F/A, side-facing etc).

In most cases of F/A seats, compliance has not been demonstrated.

[2] Row to Row HIC only. Front row HIC has not been tested.

[3] Tested with steel (non-representative) seat tracks

[4] Based on rational or qualitative analysis

[5] Where applicable (flight attendant seats)